

3.0 ALTERNATIVES

We evaluated alternatives to the North Baja Pipeline Project to determine whether they would be reasonable and environmentally preferable to the proposed action. These alternatives include the no action or postponed action alternative, system alternatives, route alternatives, route variations, and aboveground facility alternatives. The full range of alternatives considered is discussed below. Those alternatives found to warrant further consideration are analyzed in detail in section 6.0.

The evaluation criteria for selecting potentially environmentally preferable alternatives are:

- technical and economic feasibility and practicality;
- significant environmental advantage over the proposed project; and
- ability to meet the project objectives.

3.1 NO ACTION OR POSTPONED ACTION

The actions triggering this environmental review were NBP's applications to the FERC for a Certificate and to the CSLC for a permit to cross state lands. The FERC and CSLC have three courses of action in processing an application for a Certificate and a permit. The FERC and the CSLC may: 1) grant the Certificate and permit with or without conditions; 2) deny the Certificate and permit; or 3) postpone action pending further study.

If the FERC and CSLC deny or postpone NBP's applications, the environmental impacts identified in this draft EIS/EIR and draft plan amendment would not occur. In addition, should the FERC and CSLC select the no action alternative, the stated objectives of NBP's proposal would not be met and the proposed service area would not have access to the 500 MMcfd of natural gas NBP proposes to transport. Consequently, the new and existing power plants would either need to obtain natural gas from other sources or use alternative fuels such as oil, propane, or coal^{1/}. This could require the construction of additional and/or new pipeline facilities in other locations to transport natural gas supplies, or it could result in the increased use of alternative fuels with higher emission rates of nitrogen oxides and sulfur dioxide. Compared to other fossil fuels, natural gas is a relatively clean and efficient fuel that can reduce many pollutants. If alternative natural gas facilities were approved and constructed, however, each would result in its own set of specific impacts that could be less or greater than those associated with the current proposal.

Greenhouse gas (GHG) is one major emission that would result from the burning of natural gas and other fossil fuels. It is difficult to determine the impact of a pipeline project on GHG emissions; however, credible estimates of GHG impacts can be developed based upon reasonable assumptions regarding the use of the natural gas delivered by the pipeline and what energy resources would likely be utilized if the gas from the pipeline was not available. The North Baja Pipeline Project would provide 484 MMcfd of new firm capacity to generating plants in California and Mexico. If the 484 MMcfd were replaced with other fossil fuels, GHG emissions could potentially increase by 963,400 metric tons of carbon per year, depending on the alternate fuel assumptions made in the analysis. This analysis only evaluates the potential change in GHG emissions for the ultimate end user of the natural gas volumes associated with this project. GHG emissions are also related to the production, processing, transmission, and distribution of natural gas as well as for the alternative fossil fuels.

^{1/} The use of solar or hydroelectric energy sources has not been developed to the point where they would be viable for powering large electric generation plants.

3.2 SYSTEM ALTERNATIVES

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed pipeline systems to meet the stated objectives of the proposed project. A system alternative would make it unnecessary to construct all or part of the proposed project, although some modifications or additions to another existing pipeline system may be required to increase its capacity, or another entirely new system may need to be constructed. Such modifications or additions could result in environmental impact; however, the impact could be less than, similar to, or greater than that associated with construction of the proposed project.

The purpose of identifying and evaluating system alternatives is to determine whether potential environmental impacts associated with the construction and operation of the proposed facilities could be avoided or reduced while still allowing the stated objectives of the project to be met.

We evaluated existing pipeline systems currently operating in the project area that could possibly deliver the proposed volumes of natural gas to the United States/Mexico border. Existing natural gas pipelines in the same area that could serve the markets of the proposed facilities include the pipelines of El Paso, Southern California Gas Company (SoCal), and SDG&E. The general locations of these pipeline systems are shown on figure 1-1. We are not aware of any planned projects in the area that could potentially meet the objectives of the North Baja Pipeline Project.

3.2.1 El Paso System Alternative

The proposed North Baja pipeline would take natural gas from El Paso's east-west mainline system at Ehrenberg, Arizona and transport it to an interconnection with Sempra at the United States/Mexico border. The proposed interconnection point at the border is approximately 5 miles west of Yuma, Arizona. We evaluated the feasibility of using El Paso's existing 10-inch-diameter pipeline, the Yuma Lateral, that extends from El Paso's east-west mainline near Quartzite, Arizona to Yuma, Arizona to deliver the proposed volumes of natural gas to Sempra (see figure 1-1).

El Paso's Yuma Lateral is approximately 85 miles long and generally parallels SR 95. This pipeline is currently operating at or near its maximum capacity and, due to its small diameter, would not be able to transport the volumes of natural gas proposed by NBP. Expanding the system to accommodate the additional volumes of natural gas would require construction of an 85-mile-long pipeline loop^{2/} and the addition of compression. This pipeline loop would be 5.1 miles longer than the North Baja pipeline. In addition, a new pipeline would need to be constructed from the terminus of the existing Yuma Lateral at Yuma to an interconnection with the Gasoducto Bajanorte Project at the United States/Mexico border. This new pipeline would be at least 5 miles long. Assuming the use of an 80-foot-wide construction right-of-way (excluding extra workspace), construction of the additional 10.1 miles of pipeline would disturb approximately 98 acres more land than the proposed project and increase project costs.

Considering that the existing El Paso system would not meet the project objective of providing 500 MMcf/d of natural gas to a delivery point at the United States/Mexico border and an expansion of the system, if proposed, would increase land disturbance and construction costs without presenting an environmental advantage over the proposed project, we eliminated the El Paso System Alternative from further analysis.

^{2/} A pipeline loop is a segment of pipeline that is installed adjacent to an existing pipeline and connected to it at both ends. The loop allows more gas to be moved through the pipeline system at the location in which the loop is installed.

3.2.2 SoCal and SDG&E System Alternative

The SoCal pipeline system interconnects with the El Paso system at Ehrenberg, Arizona and proceeds west toward Los Angeles, California. SoCal's system also includes a 12- and 8-inch-diameter pipeline lateral that interconnects with its mainline approximately 60 miles west of Blythe, California. The laterals proceed south passing near Brawley, California before terminating in Calexico, California at the United States/Mexico border.

Further west, a series of parallel pipelines operated by SoCal extend south from Moreno, California to the SDG&E pipeline system at Rainbow, California. From this point, the SDG&E pipeline system extends south to San Diego, California and on to an interconnection with the TGN pipeline at the United States/Mexico border.

Both the SoCal and SDG&E systems are operating at capacity. Therefore, to provide the volumes of natural gas proposed by NBP these systems would require expansion and construction of new facilities similar to or greater than those proposed by NBP. Because an expansion of these systems would not present an environmental advantage over the North Baja Pipeline Project, we eliminated the SoCal and SDG&E System Alternative from further analysis.

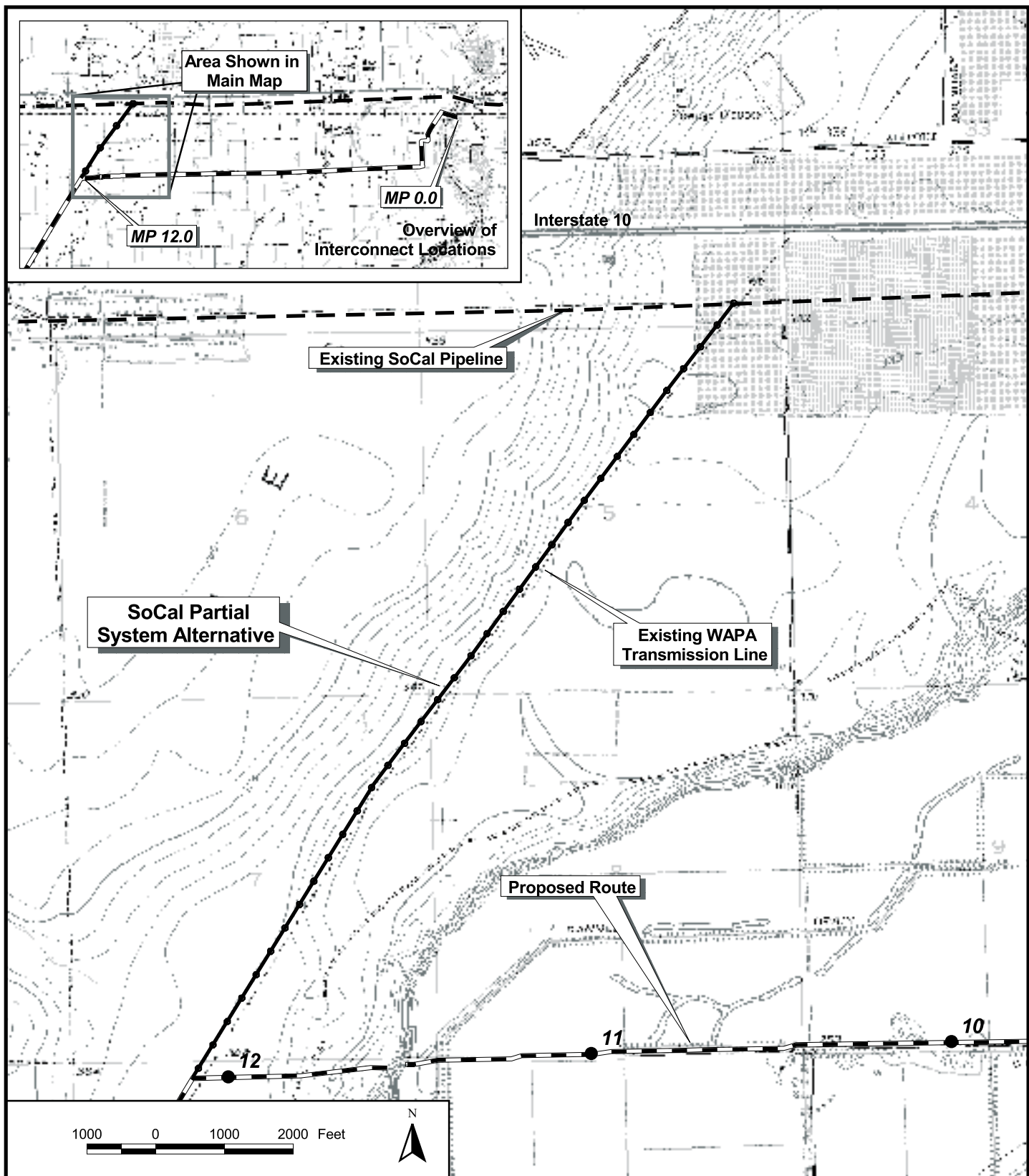
3.2.3 SoCal Partial System Alternative

We received comments during the scoping process in opposition to the proposed pipeline route along 18th Avenue. We identified the SoCal Partial System Alternative in an effort to identify an alternative to the 18th Avenue route that would address the concerns of the 18th Avenue residents, reduce environmental impact, and meet the objectives of the proposed project.

Instead of interconnecting with El Paso's existing pipeline system at Ehrenberg, Arizona, the SoCal Partial System Alternative would interconnect with SoCal's existing pipeline system near its intersection with the Western Area Power Administration's (WAPA) 161 kilovolt (kV) Parker-Blythe electric transmission line near Blythe, California (see figure 3.2.3-1). This interconnect point is approximately 9 miles west of the proposed interconnect point and 2 miles north of 18th Avenue. From the alternative interconnect point, the SoCal Partial System Alternative would require 2.7 miles of pipeline construction adjacent to the WAPA electric transmission line south to interconnect with the proposed North Baja pipeline at MP 12.0. The use of the SoCal Partial System Alternative as described would eliminate 9.3 miles of pipeline construction, avoid installation of the pipeline along 18th Avenue, and avoid a crossing of the Colorado River.

As discussed in section 3.2.2, SoCal's existing pipeline system is at or near its maximum operating capacity. Therefore, in addition to the 2.7-mile-long pipeline required to connect the existing SoCal system to the proposed route, it would be necessary for SoCal to construct a new 9-mile-long pipeline between Ehrenberg, Arizona and the alternative interconnect point to carry the additional volumes proposed by NBP. If this new pipeline were adjacent to the existing system, it would require construction through city and county streets that are more populated than 18th Avenue. Construction along other routes between Ehrenberg, Arizona and the alternative connection point would result in environmental impact similar to NBP's proposed route. The new pipeline would also have to cross the Colorado River.

Because the SoCal Partial System Alternative would offer no environmental advantage over the route proposed by North Baja, we eliminated it from further analysis. We did, however, consider several route alternatives that would avoid 18th Avenue. These are described in section 3.3 below.



LEGEND




-  Proposed Route
-  Alternative Route
-  Milepost

Figure 3.2.3-1
North Baja Pipeline Project
 SoCal Partial System Alternative

3.3 ROUTE ALTERNATIVES

Route alternatives are identified to determine if impacts could be avoided or reduced on environmentally sensitive resources, such as large population centers, scenic areas, and wildlife and natural habitat management areas that would be crossed by a proposed pipeline. While the origin and delivery points of route alternatives are generally the same as for the corresponding segment of a proposed pipeline, the route alternatives could follow significantly different alignments.

We analyzed 12 route alternatives to avoid land use, residential, or regional concerns raised during the scoping process or identified by us (see table 3.3-1). A description of each of the alternatives is presented below as well as an explanation of why we eliminated it from further consideration or continued the analysis in greater detail in section 6.0. Maps of the alternatives that were eliminated from further consideration are included in this section. Maps of the alternatives that are analyzed in greater detail in section 6.0 are included in section 6.0.

TABLE 3.3-1 Route Alternatives Analyzed for the North Baja Pipeline Project			
Alternative	Corresponding Segment of the Proposed Route (MPs)	Issue	Analyzed Further in Section 6.0
Yuma Lateral Alternative	0.0 - 79.8	Regional concerns	Yes
18 th Avenue Alternatives	0.0 - 15.0	Residential concerns	Yes
• Devers Alternative			
• 16 th Avenue Alternative			
• Center Section Alternative			
• West Canal Alternative			
Designated Utility Corridor Alternatives			
• Palo Verde Mountains Alternative	22.3 - 39.0	Land use	Yes
• Powerline North Alternative	51.8 - 66.8	Land use	Yes
• Powerline South Alternative	66.8 - 79.8	Land use	Yes
Border Alternative A	48.0 - United States/Mexico border	Regional concerns	No
Border Alternative B	48.0 - United States/Mexico border	Regional concerns	No
Border Alternative C	48.0 - United States/Mexico border	Regional concerns	No
Border Alternative D	48.0 - United States/Mexico border	Regional concerns	No

3.3.1 Yuma Lateral Alternative

During the early planning stages of the project, NBP and the BLM discussed the feasibility of a pipeline route that would follow an alignment similar to El Paso's Yuma Lateral. As discussed in section 3.2.1, the Yuma Lateral is generally parallel to SR 95 between Quartzite, Arizona and Yuma, Arizona.

While the Yuma Lateral Alternative would not begin or end at the same point as the proposed route, it would interconnect with El Paso's existing mainline and terminate at a point along the United States/Mexico border that could allow an interconnection with the proposed Gasoducto Bajanorte Project.

A detailed analysis of the Yuma Lateral Alternative in comparison with the proposed route is presented in section 6.0.

3.3.2 18th Avenue Alternatives

We received comments during the scoping process from residents along 18th Avenue who oppose the proposed pipeline route along 18th Avenue. In addition to the SoCal Partial System Alternative discussed in section 3.2.3, we evaluated four route alternatives that would avoid 18th Avenue: the Devers Alternative, 16th Avenue Alternative, Center Section Alternative, and West Canal Alternative.

The Devers Alternative would follow a completely different route than the proposed route between MPs 0.0 and 15.0. The Devers Alternative would avoid 18th Avenue by following Southern California Edison's existing Devers-Palo Verde 500 kV electric transmission line across the Palo Verde Valley. This existing transmission line is 2.5 miles south of 18th Avenue.

The 16th Avenue and Center Section Alternatives would avoid the most densely populated segment of 18th Avenue. Both alternatives would deviate from the proposed route at MP 1.2 and proceed 2.3 miles west along 16th Avenue where they would turn and proceed 0.5 mile south along C&D Boulevard. At this point, the alternatives would separate. The 16th Avenue Alternative would continue south along C&D Boulevard and rejoin the proposed route at MP 4.4. The Center Section Alternative would turn west and proceed along an alignment 0.5 mile north of the proposed route for about 4.5 miles. At this point, the Center Section Alternative would turn south and rejoin the proposed route at MP 8.9.

The West Canal Alternative would deviate from the proposed route at MP 2.3 and continue south adjacent to the east side of the D-10-13 Canal for about 2,300 feet. There it would turn west, cross the canal, and proceed across agricultural fields 2,300 feet south of 18th Avenue for about 9.1 miles to Rannells Drain. Between MPs 6.1 to 10.3, the alternative would be adjacent to the north side of West Canal. At Rannells Drain, the West Canal Alternative would turn north and proceed for about 2,300 feet until it rejoins the proposed route at MP 11.4.

Some of the factors requiring further analysis between these four route alternatives and the corresponding segment of the proposed route include temporary impacts of construction on residences, safety issues, depth of pipeline cover within agricultural land, canal and drain crossings, the amount of land required for construction, and potential impact on sensitive species. These issues and the relative advantages and disadvantages of the Devers, 16th Avenue, Center Section, and West Canal Alternatives compared to the proposed route are discussed further in section 6.0.

3.3.3 Designated Utility Corridor Alternatives

As discussed in section 1.6, the majority of the proposed pipeline route falls within the CDCA. The BLM administers a comprehensive land use management plan for the CDCA, which states that: "Applications for utility rights-of-way will be encouraged by BLM management to use designated corridors." There are 16 designated utility planning corridors within the CDCA. These corridors were developed by the BLM to minimize the number of separate rights-of-way, encourage joint use of corridors, provide alternative corridors to be considered during processing of applications, and avoid sensitive resources wherever possible (BLM, 1980). Eight additional corridors are currently identified as contingent corridors.

The proposed North Baja pipeline route deviates from designated utility corridors within the CDCA on BLM land in five locations for a total length of 19.8 miles. One of the deviations from the designated

utility corridors would also cross the Milpitas Wash SMA. Because amendments to the CDCA Plan and the Yuma District Plan would be needed for these deviations, we evaluated alternatives to the proposed route that would be within designated utility corridors. A detailed analysis of the environmental advantages and disadvantages of the Designated Utility Corridor Alternatives in comparison with the corresponding segments of the proposed route is provided in section 6.0.

3.3.4 Border Alternatives

During the project planning stage, NBP evaluated Border Alternatives A, B, C, and D at the southern end of the project in an attempt to identify the most environmentally preferable route to the United States/Mexico border (see figure 3.3.4-1). The four routes are similar in that they would all follow the proposed route from MP 0.0 to its intersection with SR 78 at MP 48.

Border Alternatives A and B

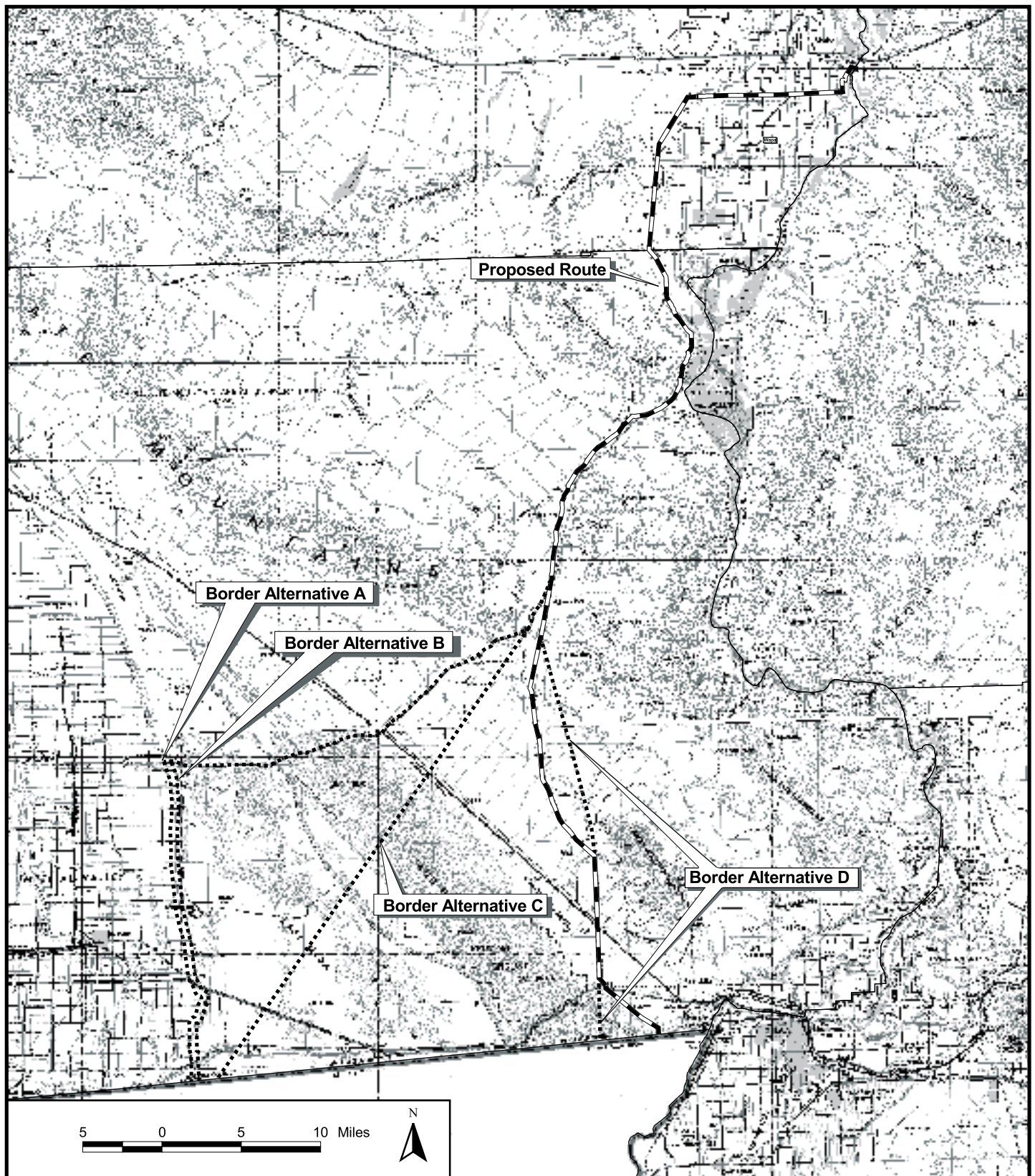
Border Alternatives A and B would deviate from the proposed route at MP 48 and proceed southwest along the same alignment adjacent to SR 78 for approximately 28 miles to the Highline Canal located on the east side of Imperial Valley. At this point, Border Alternatives A and B would separate. Border Alternative A would cross the Highline Canal, turn south, and parallel the west side of the Highline Canal to the United States/Mexico border. Border Alternative B would turn south and parallel the east side of the Highline Canal to the United States/Mexico border.

Both Border Alternatives A and B would be longer (18.9 and 18.8 miles, respectively), disturb more land, and cross more agricultural land (8.8 and 16.4 miles, respectively) than the corresponding segment of the proposed route. In addition, the alignment of both routes along SR 78 would require that they cross either the North Algodones Wilderness Area, which abuts the north side of SR 78, or the Imperial Sand Dunes Recreation Area, which abuts the south side of SR 78. Because of these disadvantages, we believe neither Border Alternatives A or B would be environmentally preferable to the proposed route and eliminated them from further consideration.

Border Alternative C

Border Alternative C would deviate from the proposed route at MP 48 and proceed southwest adjacent to SR 78 for approximately 3 miles. Border Alternative C would then separate from SR 78 and proceed southwest across the Imperial Sand Dunes Recreation Area to the United States/Mexico border. The Imperial Sand Dunes Recreation Area is one of the heaviest used recreation areas in southern California. Thousands of people use these dunes through the winter months for OHV activities and associated camping.

Border Alternative C would be 10.5 miles longer and disturb more land than the corresponding segment of the proposed route. In addition, Border Alternative C would create new right-of-way through the Imperial Sand Dunes Recreation Area in an area occupied by the federally threatened Peirson's milkvetch. This new right-of-way would increase the accessibility of OHVs into this sensitive area. Because of these disadvantages, we believe Border Alternative C would not be environmentally preferable to the proposed route and eliminated it from further consideration.



LEGEND



-  Proposed Route
-  Border Alternatives

Figure 3.3.4-1
North Baja Pipeline Project
Border Alternatives

Border Alternative D

Border Alternative D would follow the same alignment as the proposed route between MPs 48.0 and 51.8. The alternative would then deviate from the proposed route at MP 51.8 and follow Utility Corridor J in a southeasterly direction to MP 66.8. There it would rejoin and follow the same alignment as the proposed route until MP 74.5. At MP 74.5, Border Alternative D would deviate again from the proposed route and continue south along Ogilby Road and through the Imperial Sand Dunes Recreation Area to its terminus at the United States/Mexico border.

Border Alternative D would be 2.0 miles shorter and disturb less land than the corresponding segment of the proposed route. However, Border Alternative D would cross the Imperial Sand Dunes Recreation Area and, based on a records search, potentially encounter more cultural resource sites along Utility Corridor J than the corresponding segment of the proposed route. Because of the sensitivity of the Imperial Sand Dunes Recreation Area and the increased likelihood of encountering cultural resource sites, we believe Border Alternative D would be less environmentally preferable than the proposed route and eliminated it from further consideration.

3.4 ROUTE VARIATIONS

Route variations differ from system alternatives or route alternatives in that they are identified to reduce impact on specific localized resource issues, including residences, cultural resource sites, and areas of steep terrain. We identified three route variations to avoid steep terrain in the Palo Verde Mountains foothills as well as reduce the crossing of the Milpitas Wash SMA and two route variations to maximize use of existing rights-of-way and locate the pipeline further from the Imperial Sand Dunes (see table 3.4-1). Our initial review of these five route variations indicated that each has merits worthy of additional consideration. These route variations are analyzed in comparison with the corresponding segment of the proposed route in section 6.0.

TABLE 3.4-1 Route Variations Analyzed for the North Baja Pipeline Project			
Variation	Corresponding Segment of the Proposed Route (MPs)	Issue	Analyzed Further in Section 6.0
Refuge Variations • Cibola Variation • Saddle Variation • Connector Variation	28.6 - 31.9	Steep terrain/ reduce the Milpitas Wash SMA crossing	Yes
Railroad Variation	71.2 - 79.3	Maximize use of existing rights- of-way/increase distance from the Imperial Sand Dunes	Yes
I-8 Variation	71.2 - 79.3	Maximize use of existing rights- of-way/increase distance from the Imperial Sand Dunes	Yes

3.5 ABOVEGROUND FACILITY ALTERNATIVES

As described in section 2.1.2, NBP proposes to construct one compressor station, two meter stations, two pig launchers and receivers, and seven MLVs. We evaluated one alternative site for the Ehrenberg Compressor Station and one alternative site for the Ogilby Meter Station. An analysis of the potential environmental impacts of the alternative sites in comparison with the proposed sites is presented below. We

did not identify any issues nor did we receive any scoping comments regarding the locations of the remaining aboveground facilities that would warrant altering DOT-specified location requirements.

Compressor Station Alternative

The Compressor Station Alternative site would be located at MP 11.5 on the west side of the Palo Verde Valley (see figure 3.5-1). For many factors, the alternative site and the proposed site are similar. Both the alternative site and the proposed site would affect approximately 12 acres of agricultural land. Neither site would affect wetlands, waterbodies, or cultural resources. Suitable habitat for the same species of threatened, endangered, or special status birds (mountain plover, burrowing owl, Yuma clapper rail, and black rail) occurs at or within the vicinity of both sites. One species, the federally and California-listed endangered southwestern willow flycatcher, that does not occur at the alternative site exists within the vicinity of the proposed site due to its proximity to the Colorado River and associated riparian habitat. However, if field surveys determine that the species is present in the vicinity of the proposed site, NBP would develop appropriate mitigation in consultation with the FWS and the CDFG.

The proposed site offers the engineering benefit of being located at the beginning of the pipeline and would be collocated with similar facilities in an area zoned light industrial. The alternative site is not as favorably located from an engineering perspective and would affect rural residential zoned property. A major advantage of the proposed site is that NBP has acquired the site and a large buffer area from a willing landowner. The availability of the land for the alternative site is unknown.

The primary advantage of the alternative site is that the nearest noise-sensitive area (NSA) would be located approximately 0.5 mile from the site compared to 0.25 mile for the proposed site. However, NBP would be required to design the compressor station at either location so that noise levels would be within our recommended noise guidelines so the advantage would not be significant.

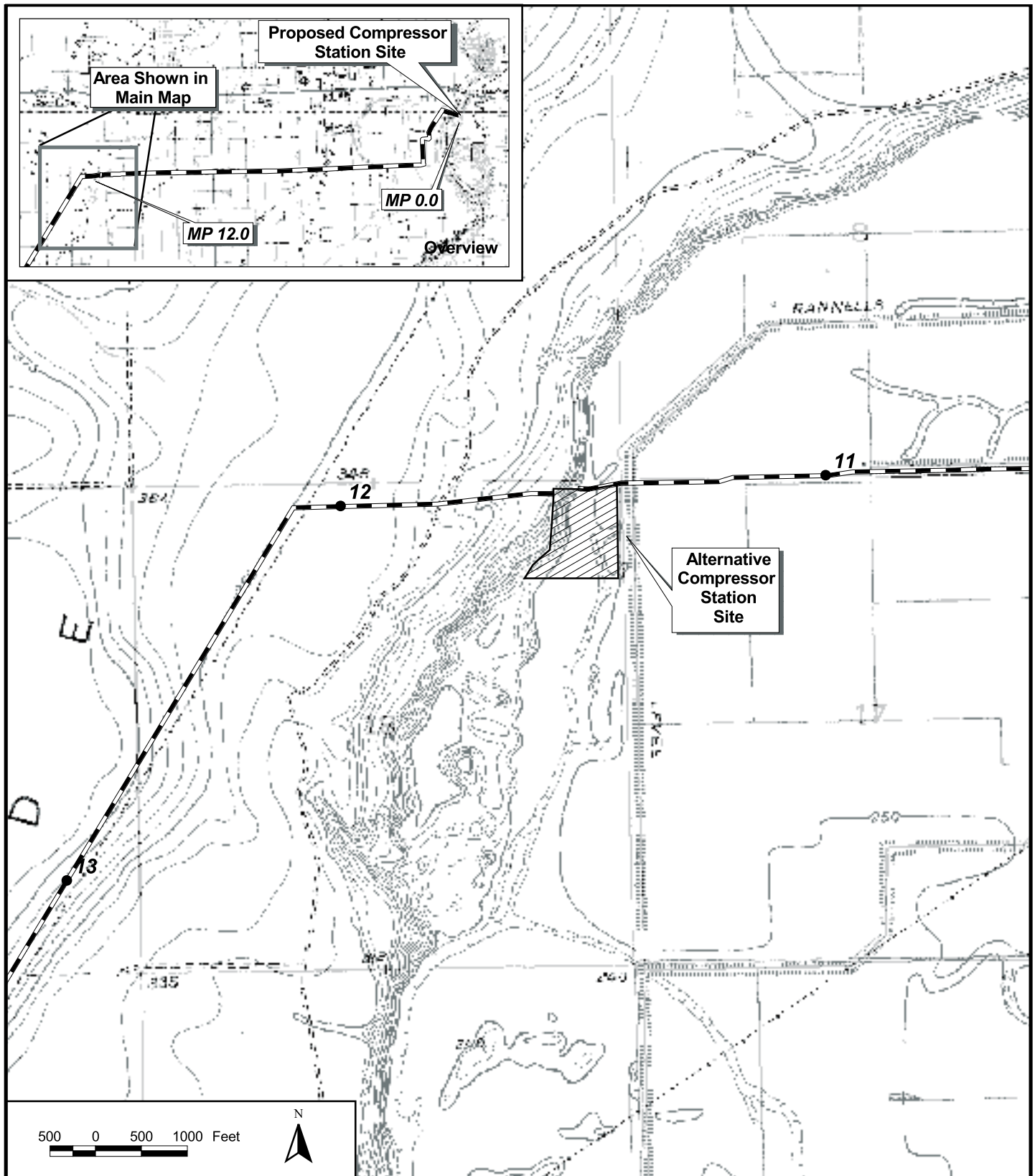
Because the alternative site offers no clear environmental advantages and has some drawbacks compared to the proposed site, we eliminated it from further consideration.

Meter Station Alternative

The Meter Station Alternative site would be located at MP 79.3 near the terminus of the project (see figure 3.5-2). Both the alternative site and the proposed site would occupy 0.9 acre of open desert land and require a special use permit from the BLM. Neither site would affect wetlands, waterbodies, cultural resources, or agricultural land. The nearest NSA to each site is approximately 0.5 mile. Suitable habitat for the same two special status species (desert tortoise and flat-tailed horned lizard) occurs at or within the vicinity of both sites. Potential habitat for two additional special status species, the Yuma clapper rail and black rail, occurs at the alternative site. If field surveys determine that the species are present in the vicinity of a site, NBP would develop appropriate mitigation in consultation with the FWS and the CDFG.

An advantage of the proposed site is that existing power and telephone facilities are located 0.25 mile away; these services are located more than 1 mile from the alternative site. Another advantage of the proposed site is that it would be accessed directly from Ogilby Road. In contrast, the alternative site would be located in a more remote area and require the improvement of approximately 1.5 miles of existing unpaved roads.

Because the alternative site offers no clear environmental advantages and has some drawbacks compared to the proposed site, we eliminated it from further consideration.



LEGEND



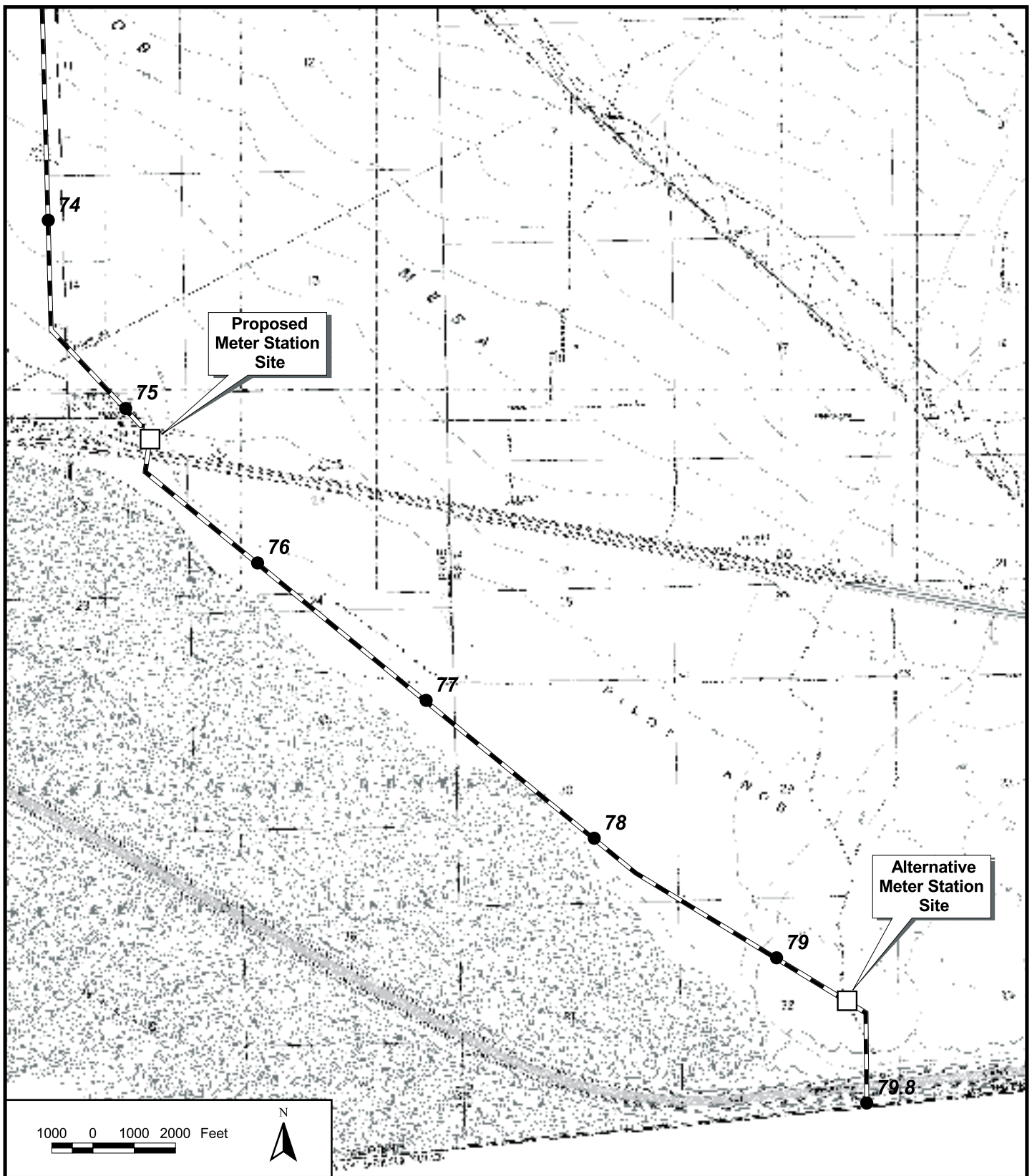
-  Proposed Route
-  Milepost

Figure 3.5-1
North Baja Pipeline Project
 Compressor Station Alternative
 Riverside County, California



LEGEND




-  Proposed Route
-  Milepost
-  Meter Station Site

Figure 3.5-2
North Baja Pipeline Project
 Meter Station Alternative
 Imperial County, California